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"ESCAPING" AMERICA'S FUTURE: A CLARION CALL FOR A NATIONAL ENERGY SECURITY STRATEGY

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The United States consumes almost one quarter of all of the available oil on earth to sustain its economy and world influence. The U.S. has become overly dependent on foreign oil and is one the top producers of greenhouse gases. U.S. leaders and departments are implementing various efforts to overcome this oil addiction, but are not coordinating these efforts so as to avoid unintended consequences. This essay proposes the development of a National Energy Security Strategy (NESS), outlines six themes for implementing the strategy, and identifies the critical factors in each theme that need to be addressed in a synchronous manner.

“ESCAPING” AMERICA’S FUTURE: A CLARION CALL FOR A NATIONAL ENERGY SECURITY STRATEGY

> I don't accept the conventional wisdom that suggests that the American people are unable or unwilling to participate in a national effort to transform the way we use energy. I don't believe that the only thing folks are capable of doing is just paying their taxes. I disagree. I think the American people are ready to be part of a mission.
>
> —President Barack Obama[1]

The United States is by far the largest consumer of petroleum, averaging almost 20 million barrels a day, or about 23% of the world’s overall consumption. Although the U.S. is the third largest producer of petroleum, the nation is 57% dependent on imported crude to sustain its world influence and the lifestyles of its citizens.[2] The availability and distribution of this vital commodity, alas, is changing rapidly in an environment that is characterized by rising competitive nations, prolonged conflicts, transnational threats, and global warming. It is also believed that the world has reached its “Hubbert’s Peak” in oil reserves and production will decline rapidly over the next 100 years.[3] Consequently, the U.S. will continue to feel the strains of oil atrophy and face a troublesome future unless we change course.

U.S. leaders and scholars recognize the need to reduce our dependence on foreign oil and have enacted legislation to escape America’s future. Recently, the President unveiled parts of his new comprehensive energy policy, the cornerstones of which are: increased domestic production; improved fuel standards for vehicles; and renewable energies. These are significant steps in the right direction. Nonetheless, the mere fact that oil is an over consumed, high demand, globalized commodity that affects every citizen underscores the need for a more comprehensive approach to energy security.

The Administration should expand its policy for energy security into a broader framework and rebrand it National Energy Security Strategy (NESS), with the Department of Energy as the lead agency. It should encompass a 20-30 year roadmap for America's safe transformation to a more secure energy future under six central themes: Engage, Secure, Conserve, Adapt, Protect, and Evolve (E.S.C.A.P.E.). The following are brief definitions:

Engage – Engaging our partners in energy trade, assuring them of our commitments, and leading the cooperative effort between suppliers and consumers in order to mitigate potential friction points in the future.

Secure – Maintaining the security and stability of our energy sources, including our oil suppliers, sea lines of communication, and critical infrastructure (both domestic and abroad).

Conserve – Promoting discipline in energy consumption through conservation efforts, incentives, and other tools.

Adapt – Transitioning to a more diverse and balanced mix of energy sources by type and origin in order to ensure resiliency throughout energy shortages and other world crises.

Protect – Protecting the environment through reduced emissions, using cleaner and less environmentally harmful sources of energy, and having rapid response capabilities to handle fuel-related disasters.

Evolve – Innovate new technologies, advocate new ideas, and transform the infrastructure and lifestyles to create a safer and more sustainable energy system.

Energy security is everybody's responsibility and involves more stakeholders than any other vital interest. The elements comprising energy security should not be fragmented into various unsynchronized strategies and plans. Rather, they should be synthesized into one comprehensive strategy so that everyone understands not only their roles and responsibilities, but also the relationships and impacts of their actions to others. This article outlines each of the six proposed themes of the NESS and the related issues that warrant a single comprehensive strategy.

Engage

Our national leaders wish to navigate away from our oil dependency via policies and spending and this is a noble undertaking. However, in the near term we must rely on imported oil – it is an inescapable conclusion. Accordingly, The NESS must address how engagement activities will support the gradual transition from imported oil. *Engagement* must involve diplomacy, leadership, and a hint of political agility in order to mitigate future disputation between the suppliers and consumers.

The international political environment is becoming more complex in the globalized world of oil trade. By 2030 the world will consume approximately 118 Million barrels of oil per day, or roughly 30 Million additional barrels daily above today's rate.[4] This has spawned a fast-paced diplomatic scramble by both developed and developing countries to secure the remaining oil reserves because of the slow progression towards more abundant and safer renewable energies. China and India are aggressively pursuing deals with new partners in oil supply in order to meet their national strategic goals for the next several decades. This, coupled with Middle Eastern Muslims' "unfavorable" views of the U.S., raises the stakes in diplomacy.[5]

Energy economist Pete Tertzakian coined the First Principle of Energy Consumption, which observes that a nation's wealth is directly related to its level of energy consumption.[6] China, specifically, has aggressively engaged oil producers worldwide for the opportunity to secure a substantial flow of oil. Recently, China supplanted the United States in both Saudi Arabia and Iraq with larger export agreements.[7] China also recently signed significant oil export agreements with the US's first and third largest exporters of oil (Canada and Venezuela).[8] China's recent successes suggest one of two things: (1) either the United States has been out-bargained, or (2) our engagement efforts need improvement.

The Engagement theme of the NESS must focus our diplomatic efforts on retaining our current sources of imported oil, while forging new relationships with developing countries of great potential. Engagement must include coordinated measures that may directly counter efforts of China in states and regions where we compete for vital interests. The Persian Gulf is one such region where China has gradually expanded its control over oil exports through trade agreements, infrastructure improvements, and other generous incentives. In addition to beating out the United States in Iraq and Saudi Arabia, China is also the second largest importer of Iranian oil, which gives it a potential advantage in shaping Middle Eastern politics.[9]

Despite current necessity, the United States must eventually become less reliant on Persian Gulf oil. Engaging African and Latin American countries along the Atlantic Ocean could reduce our dependency on Middle Eastern oil and greatly reduce risk by shortening our sea lines of communication. The United States draws about 20% of its imported oil from the Persian Gulf and could offset a portion of this through new

relationships.[10] In 2007, for instance, Brazil discovered the Carioca-Sugar Loaf Oil field off of the coast of Rio de Janeiro and it is believed to hold up to forty billion barrels of light crude.[11] This discovery, along with several other fields in the region, could provide up to several million barrels of oil daily, or enough to easily replace a portion or all of the US's Middle Eastern exports.

The United States could also lead in the establishment of an international consortium of consumer nations to possibly work out any potential trade issues or conflicts and to provide a counter force to the Organization of the Petroleum Exporting Countries (OPEC).

Secure

> He who owns the oil will own the world, for he will own the seas by means of the heavy oils, the air by means of the ultra refined oils, and the land by means of the petrol and the illuminating oils. And in addition to these he will rule his fellow men in an economic sense, by reason of the fantastic wealth he will derive from oil – the wonderful substance which is more sought after and more precious today than gold itself.
>
> —Henri Berenger[12]

Sustained access to, and flow of imported oil during this necessary transition to a safer energy mix must remain at the forefront of the National Energy Security Strategy (NESS). Oil is intrinsically connected to the economic vitality of the U.S. and global demand has risen to such a level that any subtle disruption in world supply will impact the economy, down to the individual consumer.

Throughout the world, there are several critical areas where supply interdiction could ignite a regional crisis with global implications. There are, for instance, oil transit chokepoints along sea lines of communications, including: the Strait of Hormuz, the Strait of Malacca, the Suez Canal and Suez-Mediterranean Pipeline (SUMED), the Bab

el-Mendab, the Turkish Straights, and the Panama Canal. Through these eight narrow passages flow roughly 42.7 million barrels of oil daily enroute to consumers, or about one half of the world's daily consumption.[13] Any disruption of this flow (such as the 2008 hijacking of an oil supertanker by Somali pirates or the 2002 al Qaeda suicide boat attack on the Limbourg) could have profound effects on the US economy.

There are other disconcerting warning signs that the US should heed. Of the top ten U.S. oil exporters, for example, eight are classified as "in danger" of becoming failed states.[14] These included: Iraq (critical), Nigeria, Colombia, Angola, Algeria, Venezuela, Saudi Arabia, and Mexico (borderline).[15] Terrorism, both at home and abroad, is also a constant threat to the U.S. oil trade and can have resounding effects on the economy if focused toward the oil industry. Past attacks on oil infrastructure have shown the tremendous effects that terrorism can achieve. Al Qaeda's 2005 attack on the Aramco facility in Saudi Arabia had an evidential impact on the international markets.[16] Terrorist leaders, such as Osama bin Laden, have also called upon Muslim extremists to focus attacks on oil infrastructure that serves western interests. As recently as March 2010, Saudi Arabian security forces arrested 113 al Qaeda militants that were plotting to attack key oil facilities in Riyadh.[17]

Piracy is a growing menace to the oil industry, having garnered over "tens of billions" of dollars in ransom money from hijackings along the Horn of Africa and in other places like the Gulf of Guinea.[18] Oil tankers are hijacked regularly for millions (roughly around 3 million per vessel), with cargoes that value in the range of 80 – 160 million dollars. The Sirius Star supertanker, for instance, was hijacked in 2008 and was carrying over two million barrels of crude (about 10% of US daily consumption).

The homeland as well is not without its share of vulnerabilities. The Gulf of Mexico and bordering states have the bulk of the US's domestic oil production capabilities. There are oil platforms, refineries, and the bulk of the Strategic Petroleum Reserve (SPR) all nested in this region and vulnerable to a full range of attacks and sabotage. The recent Deepwater Horizon oil spill incident in the Gulf, although classified an accident, demonstrates how damaging a potential attack on infrastructure could be to US interests.[19] Moreover, this unprecedented incident is demonstrating the need for the US Government to include multi-national corporations in its strategic framework.

There are only about 149 oil refineries in the U.S. In order to feed the nation's demand for fuel, these refineries operate between 92 to 97 percent capacity year long, leaving little room for error.[20] The protection of these critical infrastructure and key resources (CIKR) is hence another aspect of energy security that needs to be coordinated with the milestones set forth in the NESS.

The NESS should guide and inform DoD, DOE, DHS, and others in their responsibilities to secure the sources of energy that are necessary to safely make the transition to alternative fuels over the next twenty to thirty years. Since sources of U.S. oil originate from various troubled places throughout the world, the NESS should transcend traditional boundaries established by departments to provide a more comprehensive understanding of the objectives, priorities, and milestones for achieving energy security through all elements of ESCAPE. Clearly, the security of our sea lines of communication, security and capacity building of our top oil exporters and the protection of oil infrastructure and vessels require a global approach.

Conserve

Conservation is the quickest, cheapest, most practical source of energy.

—President Jimmy Carter[21]

Conservation is as vital to the NESS, as drug demand reduction is to the National Drug Control Strategy. Over 70% of all petroleum consumed by the United States is through the transportation sector, of which almost 64% of this is through light vehicles (cars, light trucks, and motorcycles).[22] This tells us that the bulk of our energy appetite is derived from a combination of many smaller transportation requirements, such as privately owned vehicles, small business cars and trucks, and other inefficient modes of transportation. Energy consumption in the United States is unrivaled by other nations and much of it must be mitigated through demand reduction.

The primary objective of the NESS under the Conserve theme should be a quantifiable reduction in consumption through conservation efforts. The President made several announcements on March 31st 2010 that touched on the fringes of conservation, but failed to strike at the heart of the problem. Higher fuel standards for vehicles, alternative fuels, and domestic exploration and production do not result in the mobilization of the masses to do more towards reducing the growing dependence on imported oil. Even the proposed Home Star Bill uses an incentive-based approach to energy conservation, but leaves the consumption rate to the individual user.[23] As written, these tools invite a paradoxical response that leads to potentially higher demand and consumption. This has been called the Jevons Paradox, Khazzoom-Brookes Postulate, or simply the rebound effect.[24] The Energy Independence and Security Act of 2007 was an important step towards comprehensive energy security, but missed the opportunity to invoke conservation. The Act addresses higher fuel economy

standards, renewable fuels, vehicle and appliance technology, energy mandates for buildings, research and development, and several other areas. However, the only attempt to address the individual consumer was the allotment of five million dollars annually for the Department of Energy to conduct a national media campaign.[25]

In order to properly mitigate our oil addiction, national leaders must embark on a conservation campaign with legislation and incentives as key elements to the NESS that will guide the reduction of unbridled consumption hand in hand with the other milestones of E.S.C.A.P.E.

The last time the U.S. leaders effectively impacted demand growth of oil was between 1977 and 1985, partially as a result of legislation and action by President Jimmy Carter during his term. Through his “Crisis of Confidence” speech and several acts such as the Fuel Use Act, he was able to both encourage and enforce conservation for the betterment of the nation.[26]

Enforcing conservation through legislation is not a popular task, but nonetheless a necessary element of a holistic strategy. The NESS should include milestones for the reduction in the use of oil, accompanied with certain corresponding milestones on improvements to mass transportation, infrastructure, the development of renewable energies, environmental restrictions, and incentives. The U.S. Government should also consider the gradual increase of a gas tax that would not only prompt the average citizen to be more selective in buying and using personally owned vehicles, but could further assist in mitigating the national deficit that resulted in 2008.

The U.S. Environmental Protection Agency (USEPA), in coordination with the Department of Energy, Department of Transportation, and Internal Revenue Service,

would be the appropriate lead federal agency for the conserve theme of the NESS. In coordination with the Senate Committee on Energy and Natural Resources, the USEPA could oversee the strategic implementation of the conservation efforts.

Adapt

The World's total oil-producing and refining capacity is currently operating at over 97.5 percent, which means that any disruption of oil supply in the world will have effects on every consumer.[27] In a recent study, researchers at Oxford University concluded that by 2015 the world will surpass its supply capacity with demand, forcing nations that have not prepared for this turning point to make tough decisions on how to survive the unanticipated period of transition to alternative fuels.[28] Adapt is an essential theme of the NESS. Adapt, in a strategic context, is the gradual and orderly diversification of our current energy portfolio according to the changing circumstances of global oil demand in order to escape a future breaking point. The Adapt theme of the NESS should address not only how the Nation will diversify its energy mix over time, but also how the U.S. will seek more stable and convenient sources of oil supply in order to sustain resiliency during future crises around the globe.

Using 2008 data, oil accounts for 40 percent of the energy market in the United States.[29] This high level of dependency points to the need to diversify our energy mix to more reliable, cleaner energy. Several countries have accomplished this seemingly difficult task. Japan, for instance, has reduced its dependency on oil by roughly 30 percent and continues to transform its energy mix based on its New National Energy Security Strategy of 2006.[30] Denmark is another trail-blazer. The oil crisis of 1973 was the catalyst of change for the Danish Government, which wisely instituted an energy strategy that yielded enough wind power infrastructure to provide 20% of the country's

electricity.[31] Admirably, Denmark's vision is to become 100% independent of fossil fuels.[32]

Adapting America's current energy mix requires some open thinking about several historically controversial sources. Nuclear power, for example, is a divisive topic that causes both elected officials and their constituents to shy away. Yet, nuclear power already provides about 20 percent of America's electricity, and has prevented the emissions of millions short tons of nitrogen oxides, sulfur dioxide, and carbon dioxide.[33] France uses nuclear power to produce eight percent of its energy.[34]

Domestic oil production is another viable source of energy, but has suffered recent setbacks due to the Deepwater Horizon oil spill in the Gulf of Mexico. The Outer Continental Shelf surrounding the United States possesses nearly 86 billion barrels of oil and some 420 trillion cubic feet of natural gas.[35] This does not suggest that the US should completely divert to these homeland resources, but should consider the risk tradeoff between home-produced versus Persian Gulf oil.

Liquid Natural Gas (LNG) is another source of energy that has yet to capture the broad interest of American industries. It is the cleanest burning fossil fuel and has the potential to replace both coal and gas-burning power plants and vehicles. Despairingly, LNG has not been broadly embraced in the U.S. and has resulted in low investments by private companies. Consequently, only seven of the forty LNG terminals that have been approved for construction in the U.S will likely be constructed.[36]

The selection of future fuels must be carefully decided. Several credible analysts believe that corn ethanol is environmentally unsound, threatening to food supplies, and

a façade due to the amount of fossil fuels ultimately used to cultivate, process and transport it.

Another aspect of adapting our energy mix for the future is to diversify our oil export partners towards more stable and safer long-term sources. Brazil, for example, is a stable government that recently discovered a huge oil reserve believed to contain anywhere between 2 and 70 billion barrels of light crude and is approximately one half the sea distance to New Orleans than the Persian Gulf.[37]

Protect

Protecting the environment should be a priority within the NESS and is indissoluble from the other critical elements of the energy strategy. Greenhouse gases are causing climate change at unprecedented levels and have been steadily increasing due to human activities, mainly from burning fossil fuels. Emissions of various types have caused global warming trends, with the last seven of eight years registering as the warmest recorded years over the last century.[38] Similarly, the rate of warming in the last thirty years has been three times greater than all of the previous 100 years.

CO_2 emissions are the most prominent contributors to these undesirable trends and are directly linked to the use of fossil fuels, mainly coal and oil. The United States and China, by far, lead the world in CO_2 emissions, delivering 20% each of the earth's total output. The United States alone has failed to lead, given that it is the top emitter of CO_2 (tied with China) and has the lowest fraction of the world's population of the Top 5 countries (5% compared to China's 20%).[39]

In order to protect the environment and prevent unnecessary acceleration of climate change, the United States must progressively mitigate emissions and further lead by example for other developing countries. This should be accomplished,

however, in a coordinated manner that does not discount the current need to use oil and coal for economic recovery and sustaining world influence. This means that the establishment of emissions controls and other environmental safeguards must be synchronized with the employment of sound alternative fuels, the advancement of new technologies, the gradual retraction from imported oil, and the growth of our economy.

There are several examples of how well-intended emissions controls can lead to unexpected outcomes. Economically, for example, the airline industry could take the hardest hit from carbon taxes because of the CO_2 levels that are emitted from jets. This means that either the airlines will be forced to make further cuts that will result in less business, commerce, and trade, or that the costs will be passed to customers.

Environmentally, a recent study of Colorado's wind energy program concluded that wind power paradoxically causes more emissions because of the intermittent "cycling" of coal plants that is needed to rebalance total energy in the grid.[40] Still another illustration is where studies reveal potential increases in carbon dioxide and nitrous oxide emissions related to the massive shift of the agriculture sector to growing bio-fuel crops.[41] The point here is that without a strategic understanding of how protecting the environment is interrelated and, hence, balanced with the conservation, adaptation, and evolution of the US energy sector, the more unintended consequences could result with independent, blanket environmental mandates.

Notwithstanding political views, the recently proposed American Power Act is a sign that the nation's leadership is cognizant of the interrelationships between protecting the environment and sustaining the economy during this monumental transformation.[42] Within it, there are provisions for cleaner energy development, including the incentives

for the use of nuclear power, new parameters for safer off-shore drilling, and sensible requirements for the retrofitting of coal power plants. Acknowledging that change requires time, it also mandates plans and strategies for clean transportation and pollution reduction, and further attempts to broaden the scope of environmental stewardship to the international level. It even specifies which departments and agencies are responsible for the various actions, plans, strategies, and reports to Congress. In essence, the act has many attributes that could form a part of the foundation of the NESS.

Another essential component of the Protect theme of the NESS needs to be a plan to develop comprehensive capabilities for quickly and effectively responding to future energy-related incidents and disasters. The response effort to the recent Deepwater Horizon oil spill, for example, reveals wholesale inadequacies of both government and private sector capabilities and response plans. It not only points to insufficient *ready* resources such as containment booms, specialized boats, and backup "dome" devices, but further demonstrates how convoluted the coordination effort can be without a roadmap for planning and exercising these responses. The U.S. Government should also be prepared to reinforce private companies with additional response capabilities should they lack the ability to effectively respond to an incident in a timely manner.

If the U.S. follows a logical path towards less dependence on imported oil, then the current transformation of our energy sector will involve more offshore drilling and nuclear power plants. Accordingly, it is only appropriate to advance the protection of our environment in a strategic sense.

Evolve

The final theme of the comprehensive NESS is Evolve. In order to avoid reliving the 1970s oil crises in the next 20-30 years, there must be a deliberate road map to renovate our infrastructure, transportation systems, living communities, and human behaviors away from oil dependence. Only effective evolution in these areas will produce enduring results.

The primary objective of Evolve under the NESS should be the transformation of U.S. infrastructure, energy-consuming systems, and people to be less reliant on oil. There are numerous components of infrastructure that need to be upgraded or replaced in order to foster energy security for the 21st Century. The 2009 American Recovery and Reinvestment Act (ARRA) signified a great starting point by authorizing over 113 billion dollars towards developing a smart grid, improving local, state, and federal infrastructure, improving the federal vehicle fleet, updating public transportation systems, providing tax credits for home owners and renewable energy companies, and funding various incentives for research and development.[43] Such a substantial investment, however, should in some way be guided by a holistic pathway for the themes of ESCAPE and not relegated to those governments and businesses that view this problem myopically. Spending and sequencing, consequently, must first be aimed at the most significant energy liabilities.

For example, the replacement of coal fired power plants with natural gas plants would produce electricity with a third less energy required, while emitting forty five percent less CO_2.[44] Liquid Natural Gas (LNG) also has the potential to offset energy demands from coal and oil with cleaner burning fuel, but requires the development of additional receiving terminals in order to account for the current delta between supply

and demand (15%) and the possibility of future application in the transportation sector and other industries.[45] Nuclear power plants, as mentioned earlier, produce even more electricity with fewer emissions.

Public transportation improvements should rank above major highway projects, especially road expansions that espouse even more apathetic use of personal transport in areas where public transportation systems are abundant. The U.S. is greatly outdone by other developed countries in mass transit. London has the oldest system and moves over 3.4 million people every day. In Hong Kong, mass transit provides 90 percent of all travel. On the contrary, 86 percent of the U.S. workforce drives to work, averaging 51 minutes on the road daily.[46]

Beyond infrastructure and transportation systems, there are several eclectic matters related to the social dimension that ought to be included into the strategy. Studies on future living communities, for example, may prove to have resonant effects on energy consumption in the United States.

Two prominent authors on energy, Peter Tertzakian and Jeff Rubin, both write with striking similarity about the evolution of living conditions in the future because of oil shortages. Tertzakian writes that in the future we might see the development of “Triple E Villages” that “combine ecology, energy efficiency, and are electronically enabled.”[47] In these villages food will be produced locally, solar and wind power will provide semi-autonomous energy sources, and incomes will be earned through cyberspace. Jeff Rubin believes that necessity will drive us to smaller communes centered on food sources such as farms or multistory greenhouses (“Farmscrapers”), because of the reduced availability of imported food and goods.[48] These ideas may seem to be a little

too radical to approach from the political pulpit, but they nonetheless point to an area that needs to *evolve* over time if we are to mitigate some of the root causes of steadily increasing energy consumption.

Final Thoughts

> In little more than two decades we've gone from a position of energy independence to one in which almost half the oil we use comes from foreign countries, at prices that are going through the roof. Our excessive dependence on OPEC has already taken a tremendous toll on our economy and our people. This is the direct cause of the long lines which have made millions of you spend aggravating hours waiting for gasoline. It's a cause of the increased inflation and unemployment that we now face. This intolerable dependence on foreign oil threatens our economic independence and the security of our nation. The energy crisis is real. It is worldwide. It is a clear and present danger to our nation. These are facts and we simply must face them.
>
> President— Jimmy Carter[49]

There is simply no silver bullet over the horizon and the world cannot sustain the projected levels of oil consumption over the next few decades. During this period, we will witness flashpoints over oil that will be characterized by increased conflict, terrorism, piracy, climate change, petro-political coercion, and economic recession.[50] In developing countries, the gradual deprivation of this resource will be manifested by higher poverty rates, starvation, declining infrastructure and gross domestic product, and the potential collapse of governments.

World leaders must intervene now by setting the strategic course for reduced oil consumption and the U.S. should lead the way with a model strategy for energy security. This monumental task cannot be accomplished, however, by only a few courageous elected officials. It requires a unity of effort amongst the government, private enterprise, and the American people. We will not realize the vision of a safer environment and a nation free of oil dependence through band-aid solutions, such as

short term tax credits, more green jobs, and hybrid cars. This can only be accomplished by bringing the currently diffuse efforts into harmony with the implementation of a National Energy Security Strategy (NESS).

The NESS can provide the vision, framework, and pathway to a safer future and ensure that all stakeholders are guided by one comprehensive effort. The NESS should address all lines of effort embodied in E.S.C.A.P.E. by setting objectives and milestones that will carefully mitigate the tensions and unintended consequences of stove piped efforts.

The Department of Energy should have the lead role in developing the strategy and coordinating the efforts. After all, President Carter created the department in 1977 following the national energy crisis to oversee the national energy plan.[51] This may require a transformation of the department in order to broaden its capacity to do strategic planning and to lead the intergovernmental, interagency, and multinational coordination.

The future of this grand nation and our children rests in the hands of the leaders and citizens who are making important decisions today. It is not so important to linger on the fact this country propelled itself to hegemony through the industrious use of oil. Instead, let us focus now towards transforming the American way into a safer, more sustainable, and prosperous society.

> We are made wise not by the recollection of our past, but by the responsibility for our future.
>
> —George Bernard Shaw

Endnotes

[1] President Barack Obama, *Remarks by the President on Clean Energy* (Washington, DC: April 22, 2009).

[2] U.S. Energy Information Administration (U.S.E.I.A.), Independent Statistics and Analysis, *2008 Petroleum Basic Statistics Report*, http://www.eia.doe.gov/basics/ quickoil.html (accessed May 1, 2010).

[3] Peter Tertzakian, *A Thousand Barrels a Second: The Coming Oil Break Point and the Challenges Facing an Energy Dependent World* (New York: McGraw-Hill, 2007), 125. The Hubbert's Peak theory posits that world discovery and production of oil follows a bell shaped curve that represents the production capability of the world. It states that the world will eventually reach a culmination of new discoveries and then begin a steady decline in production.

[4] U.S.E.I.A., *International Energy Outlook 2009, Table A4*, http://www.eia.doe.gov/oiaf/ forecasting.html (accessed April 22, 2010).

[5] The Pew Global Attitudes Project, *25-Nation Pew Global Attitudes Survey*, (Washington DC: Pew Research Center, July 23, 2009): 1.

[6] Peter Tertzakian with Keith Hollihan, *The End of Energy Obesity: Breaking Today's Energy* Addiction *for a Prosperous and Secure Tomorrow*, (New Jersey: Wiley and Sons, Inc – 2009): 39. Tertzakian's First Principle states "…that our personal wealth and well-being is directly related to our energy consumption."

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